

Correspondence

The Editorial Board will be pleased to receive and consider for publication correspondence containing information of interest to physicians or commenting on issues of the day. Letters ordinarily should not exceed 600 words, and must be typewritten, double-spaced and submitted in duplicate (the original typescript and one copy). Authors will be given an opportunity to review any substantial editing or abridgment before publication.

Factors in Preventive Medicine

TO THE EDITOR: It is encouraging in the article on preventive medicine by David Maron¹ to see that a medical student is showing so much interest in that field and has reviewed the literature so extensively.

Perhaps he is unaware of the fact that for at least 25 years many of us have used periodic screening methods rather than "the traditional annual examinations." Primary physicians' offices have also long been places for helping patients change their life habits.

In regard to his suggestion that primary and secondary prevention are more important than tertiary, is there any evidence this is true? All three are important. Many people will not seek medical attention until there is a problem. Ongoing management of hypertension for example, has already been shown to be useful in reducing non-coronary events (from 55 percent to 18 percent in five years in a 1970 Veterans Administration study²).

Mr. Maron's point that we need to evaluate successes and failures is good. However, outside of a group setting or institution, who is going to pay primary physicians to keep and analyze statistics?

Perhaps one of the most important factors in prevention is not mentioned in this article—the environmental and social impact of factors that we cannot control, but can only strive to change. For example, how can we talk about good nutrition while there are still thousands of hungry people in our society? Would assuring an adequate income for all people do more in prevention?

MARJORIE M. WILSON, MS (PreventMed), MD
Yakima, Washington

REFERENCES

1. Maron DG: Preventive medicine in practice: The state of the art (From a Medical Student). *West J Med* 134:367-372, Apr 1981
2. Hazzard WR: Aging and atherosclerosis: Interactions with diet, heredity, and associated risk factors. *In* Aging and Elderly—Syllabus CME 0962-0962A, Dec 11-12, 1980. Seattle, CME, Univ Washington School of Medicine, p B-8

Ballistics Information in Gunshot Wounds

TO THE EDITOR: It was very interesting to read the report by Drs. Dart, Braitman and Larlarb on gunshot wounds of the descending thoracic aorta¹ in the May issue.

I felt one should call attention to the fact that information concerning the ballistics of the particular injuries was not included in the case presentation. Such information as caliber, length of barrel, bullet configuration and distance of the weapon from the victim are critical factors that determine the outcome and survival in such cases. The hypervelocity calibers that are now being used are causing terrible damage, often irreparable. The hypervelocity shock wave generated by these calibers do far more damage than the remaining entry or exit wound leads the eye to believe.

Dr. Dart and his co-workers should be commended on these "heroic saves"; however, more ballistics information should be included in the medical literature discussing gunshot wounds in order to understand the mechanism of injury.

JAMES S. SIMON, MD
Tiburon, California

REFERENCE

1. Dart CH, Braitman HE, Larlarb S: Gunshot penetrating injuries of the descending aorta. *West J Med* 134:442-446, May 1981

EDITOR'S NOTE: Two articles and three letters bearing on Dr. Simon's comments have appeared in the journal in the past several years. The three letters, under the title "Facts on Ballistics," appeared in the November 1978 issue, page 437. The two articles are as follows:

1. Wilson J: Wound ballistics (Trauma Rounds). *West J Med* 127:49-54, Jul 1977
2. Wilson JM: Shotgun ballistics and shotgun injuries (Trauma Rounds). *West J Med* 129:149-155, Aug 1978

The Human Computers

TO THE EDITOR: "Buy your next car from us—we have computers on board!" This is today's appeal from the auto industry. Yes, we can have tomorrow's automobile today, armed with computers that are capable of telling us how far we are from our destination, what time we will arrive and whether we have enough fuel to take us there.

Each day the mail brings us flyers describing

office computers that can be programmed to bring greater efficiency into our office practices. We are even led to believe that all future kitchens will have their own computers. The Japanese are sending us tiny computerized TV sets no larger than a cigarette package. Recently television has brought into our living rooms bank upon bank of computers that guided Columbia into outer space.

What wonders our scientists and our engineers have wrought—almost beyond belief. But have we ever stopped to contemplate the even greater wonders of the computerization we carry around in our bodies? In comparison to the electronic wizardry in our central nervous system Detroit's solid-state black box computers are primitive calculators.

It has long been known that the central nervous system is a complex electrochemical communications apparatus, capable of transmitting instantaneous messages throughout our bodies. Now, the electron microscope has enabled us to look inside the individual nerve cell, the neuron, with all its capabilities.

Electron microscopists peering through the neuron cell membrane, discovered a beehive of activity. Each of the 7 billion neurons, acting as separate biologic entities, are constantly sending out and receiving millions of computerized messages. Each neuron has some 5,000 neurotransmitters and neuroreceptors—our “on-board” computer—to guide and regulate every body function.

The substances we feed into our body's computer, whether food, water, oxygen or drugs, are promptly acted upon as programmed. Ten years ago research workers at Stanford discovered that the impulses received by the neuron were acted upon by “receptors.” A chemical, whether food or drug, acting upon these receptors, could elicit either an “excitatory” or “inhibitory” response. An excitatory impulse could result in pleasure and enhanced body function. An inhibitory impulse could be blocked by the neuron, producing what we recognize as pain, anger, anxiety. The neuron might even produce endorphin—inner morphine—to relieve mental anguish. This keeps us humble. We are reminded of the responsibility we shoulder as we go about caring for our patients' minds and bodies.

We all witnessed a frustrating two-day delay in the launching of the space shuttle when the master computer and the backup computers were sending each other scrambled messages. Are we aware, always, that the drugs we prescribe and the chem-

icals we administer to our trusting patients may send garbled or blocking messages to their neurons? Will we harm or injure these ultrasophisticated human computers?

We envy those automotive engineers in Detroit. They can take out, look at and repair a solid-state black box. Ours is the awesome responsibility of manipulating, protecting, preserving 7 billion delicate, intangible nerve cells. That's a responsibility not to be taken lightly.

E. R. W. FOX, MD
Special Editor for Idaho
Coeur d'Alene, Idaho

A Case in Point

TO THE EDITOR: I have just finished reading your editorial “Financial Aid for Medical Students.”¹ I am just completing my first year at the University of Southern California School of Medicine and am one of the medical students to whom you are referring in your editorial. I already have \$10,500 in loans. More important, however, I have a real concern about how I will get enough loan money to complete my education. Tuition next year is more than \$9,400 and, with books, supplies and living expenses, my budget approaches \$18,500. The school can only be of minimal assistance, and with expected changes in government programs, I cannot count on getting enough money to meet my needs, either next year or in the years following.

First, I want to thank you for bringing this problem to the attention of physicians in practice. Second, should any of these physicians show an interest in “assisting needy medical students,” I would appreciate it if you would give them my name and address.

DEBORAH OLES, MSW
Los Angeles

REFERENCE

1. Financial aid for medical students (Editorial). *West J Med* 134:440, May 1981

Violence by Handguns—Commentary

TO THE EDITOR: The editorial concerning violence by handguns¹ aptly pointed up the precondition behind the epidemic of death by firearms in remarking on this nation's “infatuation with violence . . . [through] entertainment. . . .” Violence via television and motion pictures *reflects* but does not *cause* our national preoccupation with guns. The problem is primarily in the national psyche and secondarily in handgun control, which I also believe is a necessity.

However, my interest is in the public's uncon-